Bell Ringer - Solve the inequality; graph on a number line.

$$-\frac{2}{3}(2x - 7) \geq 12$$

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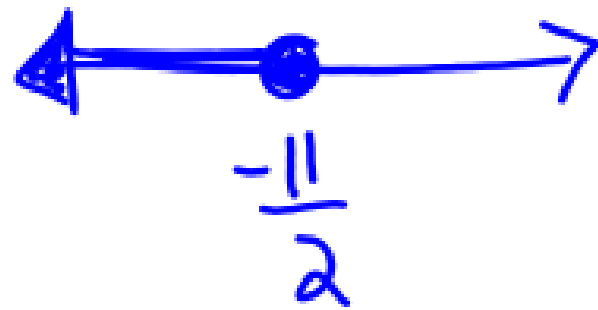
$$-\frac{3}{2} \cdot \quad -\frac{2}{3}(2x - 7) \geq 12 \cdot \frac{-3}{2}$$

$$2x - 7 \leq -18$$

$$+7 \qquad\qquad +7$$

$$2x \leq -11$$

$$x \leq -\frac{11}{2} \text{ or } -5\frac{1}{2}$$

$$-\frac{11}{2}$$

Review

Rational Expression: a fraction whose numerator, denominator, or both are nonzero polynomials. Polynomials are expressions that cannot contain negative exponents.

Key Point: A rational expression is simplified if its numerator and denominator have no factors in common except a 1 or -1.

To simplify a rational expression, factor the numerator and denominator, and then divide out (cancel) any common factors.

Things to consider:
1) Can you factor out a number, variable, or both?
2) Did you factor completely and look to cancel a grouping (parentheses)?

Personal Preference: I like a positive x^2 term so I'll factor out a -1 to avoid having a negative x^2 term.

Simplify, if possible. Then determine the values that make the expression undefined.

1. $\dfrac{3x}{4x + x^2}$

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1. $$\dfrac{3x}{4x + x^2}$$

Factor out an x

$$\dfrac{3 \cdot x}{\cancel{x}(4 + x)}$$

cancel the x

$$\dfrac{3}{4 + x}$$

undefined if

$x = -4$ or 0

Simplify, if possible. Then determine the values that make the expression undefined.

2. $$\dfrac{x^2 - 8x + 12}{2 - x}$$

Simplify, if possible. Then determine the values that make the expression undefined.

2. $$\frac{x^2 - 8x + 12}{2 - x}$$

Factor $a = 1$

Factor out -1

$$\frac{(x-6)(x-2)}{-1(x-2)}$$

cancel $(x-2)$

$$\frac{x-6}{-1} \quad \text{or} \quad -(x-6) \quad \text{or} \quad -1(x-6)$$

undefined if
$x = 2$

Simplify, if possible. Then determine the values that make the expression undefined.

3. $\dfrac{2x^2 + 5x + 3}{4x^2 + 4x - 3}$

Simplify, if possible. Then determine the values that make the expression undefined.

3. $\dfrac{2x^2 + 5x + 3}{4x^2 + 4x - 3}$ Factor $a > 1$

box method

$ac = 6$

factors $2, 3$

	x	1
$2x$	$2x^2$	$2x$
3	$3x$	3

$(2x + 3)(x + 1)$

$ac = -12$

factors $6, -2$

	$2x$	-1
$2x$	$4x^2$	$-2x$
3	$6x$	-3

$(2x + 3)(2x - 1)$

Simplify, if possible. Then determine the values that make the expression undefined.

3. $$\dfrac{2x^2 + 5x + 3}{4x^2 + 4x - 3}$$

$$\dfrac{(2x+3)(x+1)}{(2x+3)(2x-1)}$$ cancel $(2x+3)$

$$\dfrac{x+1}{2x-1}$$

undefined if
$x = -3/2$ or $\frac{1}{2}$